Section D. 49' BUSL Basic Engineering Casualty Control Exercises

Introduction

This Section provides a list of the standard engineering casualty control drills for the 49' BUSL that will be administered by evaluation teams assigned to the Boat Readiness and Standardization Program.

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Exercise: Fire in the Engine Room **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: **Winds** _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST M9000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST M10470.10 (series)
Terminal Performance Objective	After smoke/heat from a fire in the engine room sets off the alarm, identify the cause, prevent further damage, and take corrective actions.
Conditions	While underway on a 49' BUSL, with a certified crew operating within prescribed limitations, the fire alarm sounds and smoke/flames are visible through the engine room port light.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs to neutral on both engines and then secure. (P)			
b. Notify crew of casualty. (T)			
c. Engineer check engine room through lower cabin view port to assess situation. (P)			
d. Contact and inform OPCON of situation and current position. (P/N)			
e. On coxswain command, engineer energize fixed system by pulling pin and actuating the handle (simulate). (P/O)			
f. Mark time when fixed system activated. (P)			
g. Secure electrical power. (P/T)			
h. Crew member rig the anchor, if needed. (P/O)			
i. Disconnect life raft at weak link and move forward.(P)			
2. Crew Teamwork and Coordination:			
a. Coxswain brief crew of specific job and mission responsibilities. (T)			
b. Crew communicate effectively and assertively during evolution. (T)			
c. Crew assist each other as needed. (T)			
d. Crew always aware of other's location. (T)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
e. Coxswain provide appropriate and timely guidance throughout evolution. (T)			
f. Wear crew safety and survival equipment properly. (P/T/O)			
g. Do not jeopardize safety of vessel and crew. (T)			
h. Coxswain keep OPCON informed during evolution. (P/T)			
i. Make and use risk assessment. (T)			

Exercise: Loss of Steering (Cable/Hydraulics) **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: Winds _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST M9000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST M10470.10 (series)
Terminal Performance Objective	After loss of helm (steering) control, identify the cause, prevent further damage, and take corrective action.
Conditions	While underway on a 49' BUSL at cruising speed, with a certified crew operating within prescribed limitations, take corrective action for loss of steering.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs on both engines. (P)			
b. Notify crew of casualty. (T)			
c. Coxswain steer with engines, if needed. (B)			
d. Engineer investigate the casualty; crew member safety observer for engineer. (P)			
e. Crew member rig the anchor, if necessary. (P/O)			
f. Place engines in neutral. (P)			
g. Use manual system to retain positive steering control. (B)			
h. Test steering for complete range of motion (full port to full starboard). (P)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
i. Engage engines separately. (P)			
j. Keep RPMs at minimum speed. (P)			
2. Crew Teamwork and Coordination:			
a. Utilize standard steering commands. (T/P)			
b. Coxswain brief crew of specific job and mission responsibilities. (T)			
c. Crew communicate effectively and assertively during evolution. (T)			
d. Crew assist each other as needed. (T/P)			
e. Crew always aware of other's location. (T)			
f. Coxswain provide appropriate and timely guidance throughout evolution. (T)			
g. Wear crew safety and survival equipment properly. (P/T/O)			
h. Do not jeopardize safety of vessel and crew. (T)			
i. Coxswain keep OPCON informed during evolution. (P/T)			
j. Make and use risk assessment. (T)			

Exercise: Collision With Submerged Object **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: Winds _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST 000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST 0470.10 (series)
Terminal Performance Objective	After striking a submerged object, assess resulting damage, prevent further damage, and take corrective action.
Conditions	While underway on a 49' BUSL at cruising speed, with a certified crew operating within prescribed limitations, the BUSL hits a submerged object.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs to neutral on both engines. (P)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
b. Notify crew of casualty. (T)			
c. Coxswain verify position. (N/P/T)			
d. Engineer check engine compartment for flooding. (P)			
e. Crew member check all other compartments for flooding. (P)			
f. Identify source of flooding. (T/P)			
g. Use proper materials to reduce or stop flooding. (T/P)			
h. Set and maintain flood watch. (T/P)			
2. Crew Teamwork and Coordination:			
a. Coxswain brief crew of specific job and mission responsibilities. (T)			
b. Crew communicate effectively and assertively during evolution. (T)			
c. Crew assist each other as needed. (T/P)			
d. Crew always aware of other's location. (T)			
e. Coxswain provide appropriate and timely guidance throughout evolution. (T)			
f. Wear crew safety and survival equipment properly. (P/T/O)			
g. Do not jeopardize safety of vessel and crew. (T)			
h. Coxswain keep OPCON informed during evolution. (P/T)			
i. Make and use risk assessment. (T)			

Exercise: Loss of Main Engine Lube Oil Pressure **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: **Winds** _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST M9000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST M10470.10 (series)
Terminal Performance Objective	After loss of lube oil pressure in one main diesel engine, identify the cause, prevent further damage, and take corrective action.
Conditions	While underway on a 49' BUSL at cruising speed, with a certified crew operating within prescribed limitations, take corrective action for loss of lube oil pressure.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs to clutch ahead on both engines. (P)			
b. Identify affected engine. (P)			
c. Notify crew of casualty. (T)			
d. Secure affected engine. (P)			
e. Engineer check compartment to assess the situation. (P)			
f. Crew member rig the anchor, if necessary. (P/O)			
g. Engineer enter engine compartment, crew member safety observer for engineer. (P)			
h. Fire extinguishers O/S. (P)			
i. Check bilge area for lube oil. (P)			
j. Check lube oil for quality and quantity. (P)			
k. Notify OPCON. (P/T)			
l. Return to nearest safe port if cause cannot be determined or repaired. (P/T)			
2. Crew Teamwork and Coordination:			
a. Coxswain brief crew of specific job and mission responsibilities. (T)			
b. Crew communicate effectively and assertively during evolution. (T)			
c. Crew assist each other as needed. (T/P)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
d. Crew always aware of other's location. (T)			
e. Coxswain provide appropriate and timely guidance throughout evolution. (T)			
f. Wear crew safety and survival equipment properly. (P/T/O)			
g. Do not jeopardize safety of vessel and crew. (T)			
h. Coxswain keep OPCON informed during evolution. (P/T)			
i. Make and use risk assessment. (T)			

Exercise: Main Engine High Water Temperature **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: Winds _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST M9000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST M10470.10 (series)
Terminal Performance Objective	After rising operating temperature of one main diesel engine sets off the alarm, identify the cause, prevent further damage, and take corrective actions.
Conditions	While underway on a 49' BUSL at cruising speed, with a certified crew operating within prescribed limitations, take corrective action for high water temperature.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs to clutch ahead on both engines. (P)			
b. Identify affected engine. (P)			
c. Notify crew of casualty. (T)			
d. Secure engine if temperature continues to rise. (P)			
e. Engineer check engine compartment to assess the situation. (P)			
f. Crew member rig the anchor, if necessary. (P)			
g. Engineer enter engine compartment, crew member act as safety observer for engineer. (P)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
h. Open sea suction valves. (P)			
i. Check bilges. (P)			
j. Check cooling lines. (P)			
k. Check heat exchanger and expansion tank after engine has cooled.			
l. Notify OPCON. (P/T)			
2. Crew Teamwork and Coordination:			
a. Coxswain brief crew of specific job and mission responsibilities. (T)			
b. Crew communicate effectively and assertively during evolution. (T)			
c. Crew assist each other as needed. (T/P)			
d. Crew always aware of other's location. (T)			
e. Coxswain provide appropriate and timely guidance throughout evolution. (T)			
f. Wear and use crew safety and survival equipment properly. (T/P/O)			
g. Do not jeopardize safety of vessel and crew. (T)			
h. Coxswain keep OPCON informed during evolution. (T/P)			
i. Make and use risk assessment. (T).			

Exercise: Loss of Control of Engine RPM **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: **Winds** _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST M9000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST M10470.10 (series)
Terminal Performance Objective	After one engine fails to respond properly to throttle station control, identify the cause, prevent further damage, and take corrective action.
Conditions	While underway on a 49' BUSL at cruising speed, with a certified crew operating within prescribed limitations, the coxswain attempts to reduce speed, but one engine stays at set RPM and does not respond to throttle control.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs on both engines. (P)			
b. Notify crew of casualty. (T)			
c. Verify current position and evaluate situation. (P)			
d. Coxswain pull engine stop for effected engine. (P)			
e. Turn into affected engine (if situation permits). (B)			
f. Pull emergency fuel stop for the effected engine. (P)			
g. Engineer check engine compartment to assess the situation.			
h. Engineer enter engine compartment with crew member as safety observer. (P)			
i. Engineer check governor and linkage. (P)			
j. Trip emergency air shutdown. (P)			
k. Make anchor ready, if necessary. (P)			
l. Coxswain maneuver boat safely back to moorings on one engine. (P/B)			
2. Crew Teamwork and Coordination:			
a. Coxswain brief crew of specific job and mission responsibilities. (T)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
b. Crew communicate effectively and assertively during evolution. (T)			
c. Crew assist each other as required. (T/P)			
d. Crew always aware of other's location. (T)			
e. Coxswain provide appropriate and timely guidance throughout the evolution. (T)			
f. Wear and use crew safety and survival equipment properly. (T/P/O)			
g. Do not jeopardize safety of vessel and crew. (T)			
h. Coxswain keep OPCON informed during evolution. (T/P)			
i. Make and use risk assessment. (T)			

Exercise: Loss of Fuel Oil Pressure **Score** SAT / UNSAT

Unit Name _____ **Boat #** _____ **Date** _____

Coxswain _____ **Engineer** _____

Crewmember _____ **Crewmember** _____

Weather During Drill: **Winds** _____ **Seas** _____ **Current** _____ **Visibility** _____

References	a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series) b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series) c. *Naval Engineering Manual*, COMDTINST M9000.6 (series) d. *Rescue and Survival Systems Manual*, COMDTINST M10470.10 (series)
Terminal Performance Objective	After experiencing a loss in RPMs on one engine, identify the cause, prevent further damage, and take corrective action.
Conditions	While underway on a 49' BUSL at cruising speed, with a certified crew operating within prescribed limitations, engine begins to run rough and lose power.
Standards	In accordance with procedures set forth in the above references.

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
1. Casualty:			
a. Reduce RPMs on engine(s) to clutch ahead. (P)			
b. Identify affected engine. (P)			
c. Notify crew of casualty. (T)			
d. Verify current position and evaluate situation. (N/P/T)			
e. Coxswain ensure engine stops are pushed in. (P)			

ENABLING OBJECTIVES	SAT	UNSAT	REMARKS
f. Engineer proceed to mess deck, ensure emergency fuel stops are pushed in. (P)			
g. Crew member rig the anchor, if directed by coxswain. (P/O)			
h. Engineer check engine compartment to assess situation. (P)			
i. Engineer enter engine compartment with crew member as safety observer. (P/T)			
j. Check bilges. (P)			
k. Check governor and linkage. (P)			
l. Identify and correct source of problem or request additional assistance from OPCON. (P)			
2. Crew Teamwork and Coordination:			
a. Coxswain brief crew of specific job and mission responsibilities. (T)			
b. Crew communicate effectively and assertively during evolution. (T)			
c. Crew assist each other as needed. (T/P)			
d. Crew always aware of other's location. (T)			
e. Coxswain provide appropriate and timely guidance throughout evolution. (T)			
f. Wear and use crew safety and survival equipment properly. (P/T/O)			
g. Do not jeopardize safety of vessel and crew. (T)			
h. Coxswain keep OPCON informed during evolution. (P/T)			
i. Make and use risk assessment. (T)			